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UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Richard E. Smalley et al.

Group Art Unit: 1745

Serial No.: 10/034,745

Examiner: John S. Maples

Filed: December 28, 2001

Title: METHOD FOR FORMING AN ARRAY OF
SINGLE-WALL CARBON NANOTUBES AND
COMPOSITIONS THEREOF

CERTIFICATE OF MAILING
Under 37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail with sufficient postage in an enveloped addressed to Commissioner of Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on October 27, 2003.

GRACIE SOLIS

RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Office Action having a mailing date of September 26, 2003 ("Restriction Requirement"), having a shortened statutory period for response set to expire on October 27, 2003, Applicants hereby respond as follows:

The Examiner has required a restriction to one of the following inventions:

I. Claims 31-33, drawn to a method of forming a macroscopic array, classified in class 427, subclass 903.

II. Claims 163, drawn to a method of forming a large array, classified in class 427, subclass 903.

III. Claims 164-165, drawn to a parallel array, classified in class 428, subclass 457.

IV. Claims 166-169 and 172-174, drawn to a membrane, classified in class 210, subclass 348.

V. Claims 170-171, drawn to a fullerene intercalation compound, classified in class 428, subclass 445B.

- VI. Claims 175-176, drawn to a photocell, classified in class 136, subclass 243.
- VII. Claims 177-180, drawn to a battery, classified in class 429, subclass 188.
- VIII. Claims 181, and 184-187, drawn to a lithium battery, classified in class 429, subclass 231.8.
- IX. Claim 182, drawn to a second lithium battery, classified in class 429, subclass 209.
- X. Claim 183, drawn to a third lithium battery, classified in class 429, subclass 231.4.
- XI. Claim 188, drawn to a fuel cell, classified in class 429, subclass 30.

The Applicants provisionally elect Group IV (Claims 166-169 and 172-174) with traverse.

The Examiner states:

The inventions are distinct, each from the other because of the following reasons: the five battery/fuel cell Groups VII-XI are distinct from the other groups because the same include an anode, cathode, and electrolyte, which features are not part of the other groups. Also, Group XI is different than the four battery groups VII-X because in the fuel cell, at least one reactant is continually fed into the cell, which feature is different than the battery groups. The four battery Groups VII-X are different from one another because they include different structures. For example, Group IX includes fibers which do not form part of any of the other three groups. Group X comprises a fullerene compound different than the other groups. Finally, Group VII includes a membrane made of carbon while Group VIII comprises an anode made of carbon. Group VI is distinct from all of the other groups since it includes a photocell. Likewise Group V comprises a fullerene compound additionally having a chemical species in a nanotube thus distinguishing it from the Group X battery and all of the other groups. The membrane of Group IV is materially different than Groups I-III and is conductive thus being different than the Group VII battery/membrane. Group I and II are distinct because the same comprise materially different steps. Finally, Group III could be made by different methods such as that described in either of Group I and II.

Restriction Requirement, at 3.

Applicants respectfully submit that the Examiner has not satisfied his burden of establishing that restriction is required to divide 29 claims into eleven distinct groups (four of which have only one claim within the group).

As an initial matter, Applicants traverse that the groups have been properly classified both in class and subclass. For instance, the claims of Groups I and II are not coating processes and the

claims of Group IV are not liquid purification or separation processes. Also, the claims of Group VII-XI are all classified in class 429 with different subclasses. However, there is no basis as to why these were segregated into the different subclasses.

Class 429 is directed to "CHEMISTRY: ELECTRICAL CURRENT PRODUCING APPARATUS, PRODUCT, AND PROCESS."

Subclass 188 of Class 429 (Group VII) is for "Include electrolyte chemically specified and method," which is a subcategory under subclass 122 of Class 429 for "CURRENT PRODUCING CELL, ELEMENTS, SUBCOMBINATIONS AND COMPOSITIONS FOR USE THEREWITH AND ADJUNCTS."

Subclass 231.8 of Class 429 (Group VIII) is for "Carbon, graphite, or carbonaceous component is active material," which is a subcategory under subclass 218.1 of Claims 429 for "Chemically specified inorganic electrochemically active material containing," which is a subcategory under Class 209 of Class 429 for "Electrode," which is a subcategory under Class 122 of Class 429 referred to above for in Group VII.

Subclass 209 of Class 429 (Group IX) is again (as for noted above in Group VIII) is for "Electrode," and which is again a subcategory under Class 122 of Class 429 referred to above for in Groups VII and VIII.

Subclass 231.4 (Group X) is for "Alkalated carbon, graphite, or carbonaceous component is active material," which is a subcategory under subclass 218.1 of Claims 429 referred to above in Group VIII, which is a subcategory under Class 209 of Class 429 referred to above in Groups VIII and IX, which is a subcategory under Class 122 of Class 429 referred to above for in Groups VII, VIII, and IX.

Subclass 30 (Group XI) is for "Solid electrolyte," which is a subcategory under subclass 12 for "FUEL CELL, SUBCOMBINATION THEREOF OR METHODS OF OPERATING."

Accordingly, the different classifications of the eleven groups is not a proper vehicle for asserting that the inventions are distinct or there would be undue burden on the Examiner unless the claims are restricted.

As Applicants have provisionally elected Group IV, Applicants shall begin their analysis with this group. At a minimum, Group IV should not be restricted from the claims of Groups I, II,

and III. As to Group III, both Group IV and Group III claims regard an array comprising a plurality of single-wall carbon nanotubes aggregated in substantially parallel orientation. That one group (Group IV) is further limited in that it is a membrane that is nanoporous and the other group (Group III) is an array that comprises at least 10^3 of the single-wall carbon nanotubes does not render these to be materially different. Moreover, the claims of Group I are generally directed toward a particular species of the claims of Group II. And, as noted by Examiner, Group III could be made by either of these two methods is a valid reasons for keeping all of the claims of Groups I-IV together, not apart.

Applicants does not dispute that Examiner has provided a valid reason to restrict Group V from the claims of the other Groups.

As to the remaining groups (Groups VI-XI), Applicants assert that, while these claims can be grouped separately from Groups I-IV and Group V, it is improper to group them distinct from one another. This is particularly evident with regard to the battery claims of Groups VII-X. Each of these claims is directed to batteries that utilize single-wall carbon nanotubes (which are fullerenes). The fact that the subclasses to which Examiner has assigned these are so close to one another (and pretty much interchangeable) confirms that these claims are not materially different such that restriction is proper.

Applicants conclude by pointing out that, as discussed herein, the Applicants concur that it would have no objection to restricting the claims as follows:

First Group: Claims 31-33, 163-169, and 172-174 (formed by the combination of Groups I-IV and yielding a total of 13 claims);

Second Group: Claims 170-171 (2 claims of Group V); and

Third Group: Claims 175-188 (formed by the combination of Groups VI-XI and yielding a total of 14 claims).

Applicants note that under MPEP § 803.01, the criteria for restriction includes that there must be a serious burden on the Examiner that requires restriction. There is no justification reflecting that this burden is so onerous that it requires a restriction of the claims into eleven separate cases, four of which with only one claim in the group.

Applicants respectfully assert that the Restriction Requirement is unsupported. Applicants respectfully request the Examiner amend the Restriction Requirement upon reconsideration and

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group the claims into the three groups as Applicants have identified above.

Respectfully submitted,

By: 

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RESTRICTION REQUIREMENT TRANSMITTAL LETTER

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Sir:

Applicant transmits herewith a Response to Restriction Requirement for the above-identified application.

- ☒ No additional fee is required.
- ☐ The fee has been calculated as shown below:

CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY RATE	ADDITIONAL FEE
Total Claims:	7	-	29	0	x \$18 =	\$ 0.00
Independent Claims:	2	-	11	0	x \$84 =	\$ 0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT =						\$ 0.00

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- ☐ Enclosed is a check in the amount of \$0.00.
- ☒ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication, or credit any overpayment, to Deposit Account No. 23-2426 (11321-P012USD3). **A duplicate copy of this transmittal letter is enclosed.**

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.

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